UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/052,440	01/23/2002	Yoji Ito	030662-081	1948

7590 09/15/2004

Platon N. Mandros
BURNS, DOANE, SWECKER & MATHIS, L.L.P.
P.O. Box 1404
Alexandria, VA 22313-1404

EXAMINER	
HON, SOW FUN	

ART UNIT	PAPER NUMBER
1772	

DATE MAILED: 09/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/052,440	ITO, YOJI	
	Examiner	Art Unit	
	Sow-Fun Hon	1772	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 June 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *5-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *5-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Withdrawn Rejections

1. The 35 U.S.C. 102(b) rejection of claims 1-4 has been withdrawn due to cancellation of said claims.

2. The 35 U.S.C. 103(a) rejections of claims 5-15 have been withdrawn due to Applicant's amendment dated 06/21/04.

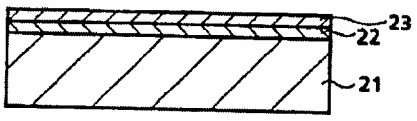
New Rejections

Claim Rejections – 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 5-8, 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okazaki et al. (previously cited US 5,747,121) in view of Schumacher et al. (previously cited US 6,410,130).

FIG. 2



Regarding claims 5, 7, Okazaki has an optical compensatory sheet comprising a transparent support 21, an optically anisotropic layer 23, and an orientation layer 22 (claim 7), shown in Fig. 2 of Okazaki above. The optically anisotropic layer is formed from discotic liquid

crystal molecules (compound) (column 6, lines 55-65) and polymerizable monomers (column 36, lines 35-45). The oriented direction of the discotic liquid crystal layer is fixed by crosslinking (curing) (column 39, lines 55-65).

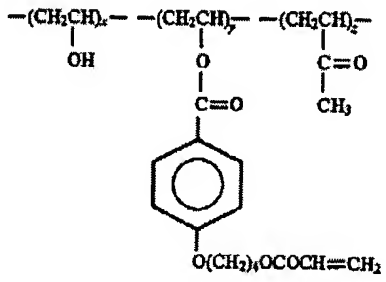
Okazaki fails to teach that the polymerizable monomers have four or more double bonds.

Schumacher teaches that binders preferably are monomers (monomeric agents) which have two or more crosslinkable groups such vinyl ones (column 43, lines 55-65). Vinyl groups have double bonds. Schumacher gives tetraacrylates as an example of monomers with four crosslinkable groups (column 44, lines 20-30).

Therefore it would have been obvious to one of ordinary skill in the art to have used binding monomers with four or more double bonds, as taught by Schumacher, as the polymerizable monomers in the discotic liquid crystal layer of Okazaki, in order to obtain an anisotropic layer wherein the orientation of the discotic liquid crystal molecules is fixed by crosslinking.

Regarding claim 6, Okazaki teaches that each of the discotic liquid crystal molecules has a double bond (vinyl moiety) (column 3, lines 44-46). The optical anisotropic layer comprising the discotic liquid crystal molecules and polymerizable monomer (other compound), is heated to a temperature for forming the discotic nematic phase, then (co-) polymerizing the layer via radiation of UV light (column 36, lines 55-65).

Regarding claim 8, Okazaki teaches that the orientation layer comprises a polymer having double bonds at side chains as shown on the next page (column 21, lines 15-25).



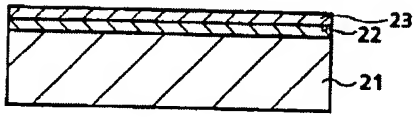
The polymer in the orientation layer and the optically anisotropic layer are co-polymerized along an interface between the orientation layer and the optically anisotropic layer (chemical bonding via the interface of the two layers by reacting the polymerizable group of the polymer and a polymerizable group of the liquid crystalline compound (column 7, lines 1-5) which comprises polymerizable monomers (column 36, lines 35-45).

Regarding claim 14, Okazaki teaches a liquid crystal display comprising two polarizing plates A and B, a liquid crystal cell provided between the plates (on both sides of the cell), and at least one optical compensatory sheet RF_1, RF_2, placed between the (liquid crystal) cell and at least one of the polarizing plates (sheet) (column 38, lines 1-15).

Regarding claim 15, Okazaki shows in Fig. 4 that optical compensatory sheets RF_1, RF_2, back polarizing plates A, B (column 38, lines 1-10). Therefore the transparent support of the optical compensatory sheet can function as a transparent protective film of the polarizing plate.

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okazaki et al. in view of Schumacher et al., as evidenced by Aminaka (previously cited US 6,476,892).

FIG. 2



Okazaki has an optical compensatory sheet comprising a transparent support 21, an optically anisotropic layer 23, and an orientation layer 22 (claim 7), shown in Fig. 2 of Okazaki on the previous page. The optically anisotropic layer is formed from discotic liquid crystal molecules (compound) (column 6, lines 55-65) and polymerizable monomers (column 36, lines 35-45). The oriented direction of the discotic liquid crystal layer is fixed by crosslinking (curing) (column 39, lines 55-65).

Okazaki fails to teach that the polymerizable monomers have four or more double bonds.

Schumacher teaches that binders preferably are monomers (monomeric agents) which have two or more crosslinkable groups such vinyl ones (column 43, lines 55-65). Vinyl groups have double bonds. Schumacher gives tetraacrylates as an example of monomers with four crosslinkable groups (column 44, lines 20-30).

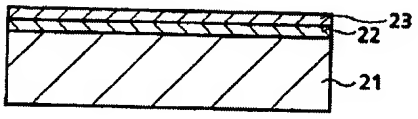
Therefore it would have been obvious to one of ordinary skill in the art to have used binding monomers with four or more double bonds, taught by Schumacher, as the polymerizable monomers in the discotic liquid crystal layer of Okazaki, in order to obtain an anisotropic layer wherein the discotic orientation of the discotic liquid crystal molecules is permanently fixed by crosslinking.

Okazaki teaches that the transparent support (film) has a retardation value in plane of not more than 50 nm (column 7, lines 50-55), which overlaps the claimed range of 0 to 50 nm. "|nx-xy|xd" is the in plane retardation of the film, and that the retardation value along a thickness direction of 30 to less than 150 (column 7, lines 40-45), which overlaps the claimed range of 70 to 400 nm, as evidenced by Aminaka.

Aminaka teaches that the index of birefringence, Δn, in plane of the film is nx-ny, and that the one along the thickness of the film is {(nx+ny)/(2-nz)} (column 4, lines 20-25). The retardation is the birefringence (Δn) x film thickness (d).

6. Claims 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okazaki in view of Schumacher and Aminaka.

FIG. 2



Regarding claim 9, Okazaki has an optical compensatory sheet comprising a transparent support 21, an optically anisotropic layer 23, and an orientation layer 22 (claim 7), shown in Fig. 2 of Okazaki above. The optically anisotropic layer is formed from discotic liquid crystal molecules (compound) (column 6, lines 55-65) and polymerizable monomers (column 36, lines 35-45). The oriented direction of the discotic liquid crystal layer is fixed by crosslinking (curing) (column 39, lines 55-65).

Okazaki fails to teach that the polymerizable monomers have four or more double bonds.

Schumacher teaches that binders preferably are monomers (monomeric agents) which have two or more crosslinkable groups such vinyl ones (column 43, lines 55-65). Vinyl groups have double bonds. Schumacher gives tetraacrylates as an example of monomers with four crosslinkable groups (column 44, lines 20-30).

Therefore it would have been obvious to one of ordinary skill in the art to have used monomers with four or more double bonds, taught by Schumacher, as the polymerizable

monomers in the discotic liquid crystal layer of Okazaki, in order to obtain an anisotropic layer wherein the discotic orientation of the discotic liquid crystal molecules is permanently fixed by crosslinking.

Okazaki teaches that the transparent support (film) has a retardation value in plane of not more than 50 nm (column 7, lines 50-55), which overlaps the claimed range of 0 to 50 nm. "|nx-xy|xd" is the in plane retardation of the film, and that the retardation value along a thickness direction is in the range of 30 to less than 150 nm (column 7, lines 40-45), which overlaps the claimed range of 70 to 400 nm

Regarding claims 10-13,Okuzaki teaches that the transparent support film is preferably made from cellulose acetate (triacetyl), but fails to specify that it has an acetic acid content in the range of 59.0 to 61.5 %, that it contains an aromatic compound having two or more aromatic rings, that it is formed by casting two or more cellulose acetate solutions simultaneously, or that it is formed from a solution of cellulose acetate in a solvent.

Regarding claim 10, Aminaka teaches a cellulose acetate film which has an acetic acid content with the claimed range of 59.0 to 61.5%, and which has a retardation value in plane, R_e, of 20 to 70 nm (column 1, lines 55-65), which overlaps the in plane retardation range of 0 to 50 nm of Okazaki, and a retardation value along a thickness direction, R_{th}, with the range of 70 to 400 nm (column 1, lines 55-65), which overlaps the thickness retardation value range of 30 to less than 150 nm of Okazaki.

Regarding claim 11, Aminaka teaches that the cellulose acetate film contains an aromatic compound having two or more aromatic rings in the claimed amount of 0.01 to 20 weight parts based on 100 weight parts of cellulose acetate (column 2, lines 1-10).

Regarding claims 12-13, Aminaka teaches that the cellulose acetate film is formed from a solution of cellulose acetate in a solvent selected from a group consisting of an ether having 2 to 12 carbons atoms, a ketone having 2 to 12 carbon atoms or an ester having 2 to 12 carbon atoms ((column 7, lines 40-50) (claim 13). Casting two or more cellulose acetate solutions simultaneously increases the efficiency of the film production process (claim 12).

Hence Aminaka teaches the specifics of tailoring the cellulose acetate film to provide the desired retardation properties. Therefore it would have been obvious to one of ordinary skill in the art to have used the specific cellulose acetate film of Aminaka as the cellulose acetate film of Okazaki, in order to obtain a transparent support with the desired film retardation characteristics.

Response to Arguments

7. Applicant's arguments with respect to claims 5-15 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number is (571)272-1492. The examiner can normally be reached Monday to Friday from 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached at (571)272-1498. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. Hon

Sow-Fun Hon

09/10/04

/Harold Pyon/

HAROLD PYON
SUPERVISORY PATENT EXAMINER
1772

9/14/04